Energy Systems Test Area (ESTA) Battery Test Operations
Test Request Worksheet

This worksheet will facilitate the development of a cost and schedule estimate for utilizing the ESTA Battery Test Facility. Please complete this form and submit to the ESTA Branch Chief, jsc-cal-ep6-esta@nasa.gov

Test Requester Information

Test Article Expert:	Contact Information (Phone, E-mail, Address):

Test Objectives

Vibration Testing ☐	Sine ☐	Random ☐	Shock ☐
Battery Performance ☐	Cell Chemistry ☐	Endurance Cycling ☐	Storage ☐
	Operate-to-Failure ☐	Thermal Testing ☐	Vacuum Testing ☐
Battery Abuse ☐	Crush Testing ☐	Destructive Analysis ☐	Drop Testing ☐
	Heat-to-Vent ☐	Overcharge/overdischarge ☐	PTC Failure ☐
	Short Circuit ☐	Vent/Burst Testing ☐	

Purpose of Test:	
Proposed Test Start Date:	Critical Test Start Date:

Test Article

Test Article Description:	
Physical Dimensions (L/W/H):	Weight:

Batteries

Model Number:	Capacity:	Nominal Voltage:
Mass (entire assembly):	Watt Hours (entire assembly):	Number of Cells Delivered:
Volume (individual cells):		
Cell Configuration:		
Description of any smart circuitry:		
Chemistry (Alkaline, Ni-Cd, Ni-MH, Li-ion, Other):		
Charge Schedule (current, voltage, time)		
Discharge Schedule (current, voltage, time):		
Battery Safety Limits:		

Operational Requirements

Functional Checks (Describe any functional checks to be performed prior to, during, or after testing):	
Test Article Limitations (High/low cutoff temperature, ramp rate not to exceed):	
Continuous Operations (24 hr):	Authorized Shutdown Points:

Test Article Handling Requirements

Cleanliness Level:	Controlled Access:
Special Moving/Handling:	
Storage Requirements:	

Test Article Interface

Test Article Interface Design (Facility or Requester designed, drawings attached, instructions):
Test Fixture (facility stock, facility fabricated, or requester provided):
Power Supply (Describe power supply to test article; include voltage, current, and connections):
List materials and instruments supplied by Requester (connectors supplied):

Designs/Drawings

We can accept files through a File Transfer Protocol (FTP) site, by e-mail, or via standard mail.

1. E-mail drawings to jsc-cal-ep6-esta@nasa.gov.
2. The Test Director will send an invitation to the NASA FTP site to upload and send files.
3. Mail drawings to National Aeronautics and Space Administration, Attention Martin McClean, Mail Code EP6, Lyndon B. Johnson Space Center, Houston, TX 77058.

Test Environment (Vibration)

Complete the Test Environment table below or provide a plot of the test environment to be simulated.

Axis (x, y, z or all)	Frequency Range (Hz):	Amplitude (g^2/Hz)	Tolerance (dB)	Temperature (°F)	Tolerance (°F)	Duration

Test Environment (Performance Testing)

Describe the test environment for each environment to be simulated.

Cell Chemistry:
Long-Term Storage Testing:
Endurance Cycling:
Operate-to-Failure:

Test Environment (Thermal/Vacuum)

Complete the Test Environment table below or provide a plot of the test environment to be simulated.

Type	Minimum	Maximum	Ramp Rate	Tolerance	No. of Cycles
Pressure					
Temperature					
Describe any holds at temperature outside of thermal soaks:					
Termination Criteria (Temperature cutoff):					

Test Environment (Abuse)

Describe the test environment for each environment to be simulated

Crush Testing:
Drop Testing:
Destructive Analysis:
Vent/Burst Testing (Hydrostatic, Pneumatic, Pressure, Burst Expected, Pressure Rise Rate):
Heat-to-Vent:

Overcharge/pverdischarge (current, voltage, time, data rate)
PTC Failure:
Short Circuit:
Destructive Analysis:

Instrumentation

Instrumentation (type of instrumentation, number, attach diagram of planned sensor locations):
Instrumentation Provided by Test Requester:

Data Acquisition and Recording

Number of Channels:	Video Recording (Yes/No):
Sampling Rates:	Photographic Film (Yes/No):
Real-Time Data Processing (Yes/No):	High Speed/Low Speed (Video):
Data File (ASCII/Excel):	Plots (Yes/No):

Other Information

List any other information pertinent to the test:

Test Article Hazard Checklist

A hazard analysis statement is required for any of the following applicable attributes of any of your provided hardware (e.g., test article, support equipment).

Hazard	Y	N	Comments
Mechanical	☐	☐	
Handling (> 40 lb or > 4 ft in any dimension)	☐	☐	
Instability	☐	☐	
Sharp Edges	☐	☐	
Pinch Points	☐	☐	
Exposed Mechanisms (e.g., rotating, reciprocating)	☐	☐	
Pressure Systems	☐	☐	
Stored Energy (e.g., springs, weights, flywheels)	☐	☐	
Ejected Parts, Projectiles	☐	☐	
Electrical	☐	☐	
Voltage (> 50 volts)	☐	☐	
Batteries	☐	☐	
Generation/Storage (e.g., coils, magnets, capacitors)	☐	☐	
Electrostatic Sensitive Devices	☐	☐	
Thermal	☐	☐	
Hot Surfaces (> 113 °F, 45 °C)	☐	☐	
Heaters	☐	☐	
Cold Surfaces (< 39 °F, 4 °C)	☐	☐	
Cooling Devices	☐	☐	

Hazard	Y	N	Comments
Radiation	☐	☐	
Ionizing	☐	☐	
Non-Ionizing	☐	☐	
Laser	☐	☐	
Microwave	☐	☐	
Infrared (IR)	☐	☐	
Ultraviolet (UV)	☐	☐	
Radio Frequency (RF)	☐	☐	
Visible Light, High Intensity	☐	☐	
Material	☐	☐	
Uncontained Brittle Materials	☐	☐	
Test Environment Incompatibility	☐	☐	
Contained Fluids	☐	☐	
Toxic, Corrosive, Flammable Fluids	☐	☐	
Biohazards	☐	☐	
Miscellaneous	☐	☐	
Noise Level (> 85 dBA)	☐	☐	
Ultrasonic	☐	☐	
Pyrotechnics/Explosives	☐	☐	